

REMARKS

Claims 1-27 are pending in the application and stand rejected under Kuwabara (U.S. Patent No. 6,980,686 B2), and also in combination with Spaeth (U.S. Patent No. 2,349,012) or Lin, et al. (U.S. Patent No. 6,091,846).

The specification has been amended to correct syntax errors. No new matter has been added.

Because of clear differences between the pending claims and the prior art of record—that is, the prior art of record does not teach a threshold *region* having an *upper* limit—no amendments are considered necessary for allowance and none made. Consequently, Applicant requests reconsideration and allowance of the claims in light of the following remarks.

Claim Rejections – 35 U.S.C. § 102

Claims 1-2, 5-7, 9-10, 13, 15-21 and 24-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuwabara (U.S. Patent No. 6,980,686 B2).

Independent claims 1, 9 and 19 include the following limitations:

CLAIM 1:

- presetting a threshold *region including at least one pair of upper and lower limits*;
- comparing the threshold *region* with the raw datum; and
- marking the target pixel as defective if the raw datum is within the threshold *region*.

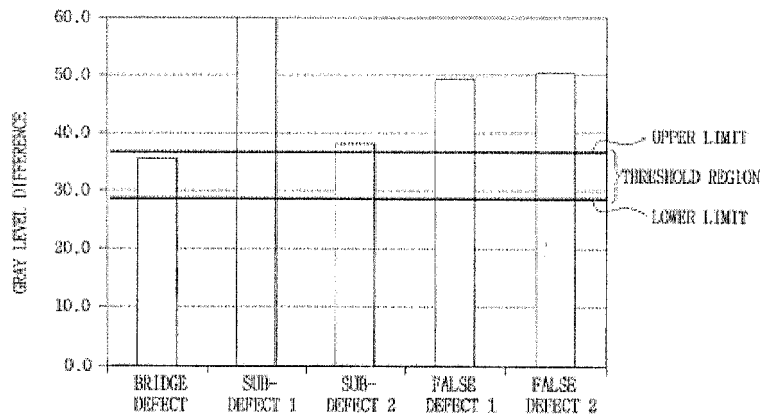
CLAIM 9:

- a setting unit for presetting a threshold *region, wherein the threshold region includes at least one pair of upper and lower limits*; and
- a judging unit for judging whether or not the target pixel is a defective pixel by comparing the raw datum of the target pixel with the threshold *region*.

CLAIM 19:

- presetting a threshold *region including at least one pair of upper and lower limits*; and
- comparing the raw datum with the threshold *region*.

Note that each of the independent claims set forth the step or apparatus carrying out the step of “presetting a threshold region . . . including at least one pair of upper and lower limits.” The limitation “threshold region” can be understood by looking at Applicant’s FIG. 9 (below) where there is a lower limit and an upper limit bracketing a set of values.



Application, FIG. 9
Threshold region denotes range between two values

Kuwabara does not operate with a threshold “region including at least one pair of upper and lower limits.” Instead, Kuwabara teaches a multistep testing process where the threshold (e.g., lower limit) is set to increasingly higher values. Kuwabara continually and consistently speaks of comparing the absolute value of the gray level differential being “greater than” the first, second, and third values:

- In step 204 [FIG. 7], the absolute value of the signed differential image is compared with the first threshold value to obtain the part where the absolute value is **greater than** the first threshold value. [Kuwabara, col. 8, lines 43-46, *emphasis added*]
- The absolute values . . . are compared in step 210 [FIG. 7] with the second threshold value that is **greater than** the first threshold value, and included among the defect candidates if the second threshold value is exceeded. [Kuwabara, col. 9, lines 18-21, *emphasis added*]
- In step 224 [FIG. 11], whether the difference is greater than the third threshold value is judged . . . [and] if **greater**, it is left in the defect candidate map in step 229 and step 211 is applied. [Kuwabara, col. 10, line 57 to col. 11, line 4, *emphasis added*]

Rather than teach a threshold region with an upper and lower limit, Kuwabara instead discloses using three sets of progressively higher lower limits where the only consideration is whether the gray level difference of the pixel tested exceeds the lower limit, not whether it falls within a range defined by the upper and lower limit. As Kuwabara fails to teach this element found in all pending claims, there can be no rejection of the claims under either §102 or §103 in the absence of such teaching.

Finally, and by way of example, the advantages realized through the invention of setting a threshold region that includes an upper limit is as follows:

The threshold region for detecting the bridge defect, which is a killer defect generated during the NVM fabrication process, is defined by a lower limit that is identical to the conventional threshold value 30 and by an upper limit above which a sub-defect and a false defect are detected. Accordingly, a sub-defect and the false defect are not detected since the gray level differences of a sub-defect and a false defect are more than the upper limit.

[Application, page 10, lines 7-12]

In contrast, Kuwabara treats as real defects only those that exceed each of the three threshold values. Accordingly, and because Kuwabara does not suggest using an upper limit to define a region, it would miss differentiating sub-defects and false defects from the real, killer defects.

A further differentiation is that the invention, as noted in the claims, compares the “raw datum” of the gray level difference with the threshold region. Kuwabara compares the absolute value, not the raw datum itself, to a threshold lower limit. Application of the absolute value amount to the threshold leads to the problems expressed in the Application FIG. 10 and accompanying text where killer and non-killer defects are undifferentiated. For example, and as stated on page 10, lines 22-31 of the Application, a killer striation defect in an S-poly patterning process is recognized as having a most likely gray level difference range between 20 and 60, which non-killer defects have gray level differences between about -20 and -60. If the threshold were applied to the absolute value of these measured amounts, then both types of defects are detected together and thus not differentiated.

Claim Rejections – 35 U.S.C. § 103

Claims 3-4, 11-12 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara (U.S. Patent No. 6,980,686 B2) in view of Spaeth (U.S. Patent No. 2,349,012).

Claims 8, 14 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuwabara (U.S. Patent No. 6,980,686 B2) in view of Lin, et al. (U.S. Patent No. 6,091,846).

As neither Spaeth nor Lin disclose the use of a threshold range, then rejection of the claims under §103(a) fails as a matter of law.

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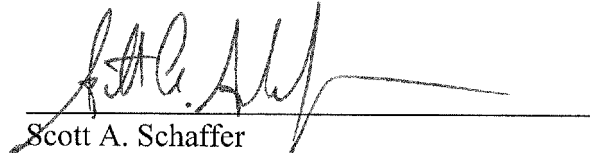
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For the foregoing reasons, reconsideration and allowance of claims 1-27 of the application as amended is requested. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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